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EXAMINER

LU, ZHIYU

ART UNIT

PAPER NUMBER

2618

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/607,796	Applicant(s) JAVOR ET AL.	
	Examiner Zhiyu Lu	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-14 and 16-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-14 and 16-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 10 and 14 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishizaki et al. (US Patent#5274388) in view of Kegasa et al. (US Patent#6724804)

Regarding claim 1, Ishizaki et al. teach an apparatus (Fig. 1), comprising:

- a) a first antenna (1 of Fig. 1) coupled to a first receiver (3 of Fig. 1); and
- b) a second antenna (2 of Fig. 1) coupled to a second receiver (3 of Fig. 1) and having a radiation pattern different than a radiation pattern of the first antenna (column 3 lines 47-53).

But, Ishizaki et al. do not expressly disclose the first receiver comprises a first low noise amplifier (LNA) having an input terminal coupled to the first antenna and an output terminal coupled to a first mixer; the second receiver comprises a second low noise amplifier (LNA) having an input terminal coupled to the second antenna and an output terminal coupled to a

Art Unit: 2618

second mixer; and a voltage controlled oscillator (VCO) coupled to the first mixer and to the second mixer.

Kegasa et al. teach a transmitter comprises a first low noise amplifier (LNA, 1003 of Fig. 2) having an input terminal coupled to the first antenna and an output terminal coupled to a first mixer (1004 of Fig. 2); a receiver comprises a second low noise amplifier (LNA, 1018 of Fig. 2) having an output terminal coupled to the second antenna and an input terminal coupled a second mixer (1016 of Fig. 9); and a voltage controlled oscillator (VCO, 1120 of Fig. 2) coupled to the first mixer (1004 of Fig. 2) and to the second mixer (1016 of Fig. 2, column 4 lines 42-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the LNAs, mixers, and VCO coupling taught by Kegasa et al. into the apparatus of Ishizaki et al. in order to compensate or cancel out noise from received signal.

Regarding claim 10, Ishizaki et al. teach a system, comprising:

a wireless wide area network (WWAN) device (abstract), comprising:

- a) a first antenna (1 of Fig. 1) coupled to a first receiver (3 of Fig. 1); and
- b) a second antenna (2 of Fig. 1) coupled to a second receiver (3 of Fig. 1) and having a radiation pattern different than a radiation pattern of the first antenna (column 3 lines 47-53).

But, Ishizaki et al. do not expressly disclose the first receiver comprises a first low noise amplifier (LNA) having an input terminal coupled to the first antenna and an output terminal coupled to a first mixer; the second receiver comprises a second low noise amplifier (LNA) having an input terminal coupled to the second antenna and an output terminal coupled to a

Art Unit: 2618

second mixer; and a voltage controlled oscillator (VCO) coupled to the first mixer and to the second mixer.

Kegasa et al. teach a transmitter comprises a first low noise amplifier (LNA, 1003 of Fig. 2) having an input terminal coupled to the first antenna and an output terminal coupled to a first mixer (1004 of Fig. 2); a receiver comprises a second low noise amplifier (LNA, 1018 of Fig. 2) having an output terminal coupled to the second antenna and an input terminal coupled a second mixer (1016 of Fig. 9); and a voltage controlled oscillator (VCO, 1120 of Fig. 2) coupled to the first mixer (1004 of Fig. 2) and to the second mixer (1016 of Fig. 2, column 4 lines 42-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the LNAs, mixers, and VCO coupling taught by Kegasa et al. into the system of Ishizaki et al. in order to compensate or cancel out noise from received signal.

Regarding claim 3, Ishizaki et al. and Kegasa et al. teach the limitation of claim 1.

Ishizaki et al. also teach the limitation of the first antenna is a whip antenna (1 of Fig. 1).

Regarding claim 11, Ishizaki et al. and Kegasa et al. teach the limitation of claim 10.

Ishizaki et al. also teach the limitation of the wireless wide area network (WWAN) device is a cellular telephone (column 1 lines 6-7).

3. Claims 14, 16 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable by Ying (US Patent#6697020) in view of Kegasa et al. (US Patent#6724804).

Art Unit: 2618

Regarding claim 14, Ying teaches a method, comprising:

a) receiving a first signal from a first antenna (21 of Fig. 3) at the input terminal of a first receiver (22 of Fig. 3); and

b) receiving a second signal (GPS) different from the first signal (Cellular) from a second antenna (16 of Fig. 3) at the input terminal of a second receiver (19 of Fig. 3), wherein the radiation pattern of the first antenna is different than the radiation pattern of the second antenna (column 2 lines 9-27).

But, Ying does not expressly disclose mixing the first signal with an oscillator signal provided by a voltage controlled oscillator (VCO) to provide a first baseband signal; and mixing the second signal with the oscillator signal provided by the voltage controlled oscillator (VCO) to provide a second baseband signal.

Kegasa et al. teach mixing (1004 of Fig. 2) the first signal with an oscillator signal provided by a voltage controlled oscillator (VCO, 1120 of Fig. 2) to provide a first baseband signal; and mixing (1016 of Fig. 2) the second signal with the oscillator signal provided by the voltage controlled oscillator (VCO) to provide a second baseband signal (column 4 lines 42-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate utilizing mixers and VCO coupling taught by Kegasa et al. into the method of Ying in order to compensate or cancel out noise from received signal.

Regarding claim 16, Ying and Kegasa et al. teach the limitation of claim 14.

Ying also teaches the limitation of receiving a first signal comprises receiving the first signal from an omni-directional antenna having a non-directive radiation pattern (column 2 lines 9-27).

Art Unit: 2618

Regarding claim 18, Ying and Kegasa et al. teach the limitation of claim 14.

Ying also teaches the limitation of receiving the second signal from a directive antenna having a directive radiation pattern (column 2 lines 9-27).

Regarding claim 19, Ying and Kegasa et al. the limitation of claim 18.

Ying also teaches the limitation of receiving the second signal from a microstrip patch antenna (column 2 lines 28-32).

4. Claims 2, 4 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishizaki et al. by (US Patent#5274388) in view of Kegasa et al. (US Patent#6724804) and Ying (US Patent#6697020).

Regarding claim 2, Ishizaki et al. and Kegasa et al. the limitation of claim 1.

But, Ishizaki et al. and Kegasa et al. do not expressly disclose the limitation of the first antenna is an omni-directional antenna having a non-directive radiation pattern and wherein the second antenna is a directive antenna having a directive radiation pattern.

Ying teaches the limitation of a portable device having a first antenna is an omni-directional antenna (Cellular, 21 of Fig. 3) having a non-directive radiation pattern and wherein a second antenna (GPS, 16 of Fig. 3) is a directive antenna having a directive radiation pattern (column 2 lines 9-27).

Art Unit: 2618

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate having an omni-directional antenna and a directive antenna taught by Ying into the modified apparatus of Ishizaki et al. and Kegasa et al., in order to provide different signal services corresponding to application purpose.

Regarding claim 4, Ishizaki et al. and Kegasa et al. teach the limitation of claim 1.

But, Ishizaki et al. and Kegasa et al. do not expressly disclose the limitation of the second antenna is a microstrip patch antenna.

Ying teaches the limitation of a portable device having its second antenna being a microstrip patch antenna (column 2 lines 28-32).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate having second antenna being a microstrip patch antenna taught by Ying into the modified apparatus of Ishizaki et al. and Kegasa et al. for the purpose of low cost and application purpose.

Regarding claim 12, Ishizaki et al. and Kegasa et al. teach the limitation of claim 11.

Ishizaki et al. also teach the limitation of both antennas are parts of the cellular telephone.

But, Ishizaki et al. and Kegasa et al. do not expressly disclose the limitation of at least a portion of the first antenna is external to a housing of the cellular telephone and wherein the second antenna is internal to the housing of the cellular telephone.

Ying teaches the limitation of at least a portion of the first antenna is external to a housing of the cellular telephone (column 1 lines 30-37) and wherein the second antenna is internal to the

Art Unit: 2618

housing of the cellular telephone (column 4 lines 19-22), where the two are obvious to one of ordinary skill in the art to combine into one embodiment.

There, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate hiding second antenna in the housing taught by Ying and having an external traditional antenna as the first antenna taught by Ying into the modified system of Ishizaki et al. and Kegasa et al., in order reduce the size of the cellular telephone and enlarge signal receiving strength.

Regarding claim 13, Ishizaki et al. and Kegasa et al. teach the limitation of claim 10.

But, Ishizaki et al. and Kegasa et al. do not expressly disclose the limitation of the first antenna is an omni-directional antenna having a non-directive radiation pattern and wherein the second antenna is a directive antenna having a directive radiation pattern.

Ying teaches the limitation of a portable device having a first antenna is an omni-directional antenna (Cellular, 21 of Fig. 3) having a non-directive radiation pattern and wherein a second antenna (GPS, 16 of Fig. 3) is a directive antenna having a directive radiation pattern (column 2 lines 9-27).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate having an omni-directional antenna and a directive antenna taught by Ying into the modified apparatus of Ishizaki et al. and Kegasa et al., in order to provide different signal services corresponding to application purpose.

Art Unit: 2618

5. Claims 6-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishizaki et al. (US Patent#5274388) in view of Kegasa et al. (US Patent#6724804) and Loke (US2003/0027610).

Regarding claim 6, Ishizaki et al. and Kegasa et al. teach the limitation of claim 1.

Ishizaki et al. and Kegasa et al. do not expressly disclose the limitation of the first receiver is a direct conversion receiver.

Loke teaches the limitation of a receiver being a direct conversion receiver (paragraphs 0007-0008).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate direct conversion receiver taught by Loke into the modified apparatus of Ishizaki et al. and Kegasa et al., in order to demodulate amplitude modulated signals.

Regarding claim 7, Ishizaki et al. and Kegasa et al. teach the limitation of claim 1.

But, Ishizaki et al. and Kegasa et al. do not expressly disclose the limitation of further comprising a baseband processor coupled to the first receiver and the second receiver.

Loke teaches the limitation of a baseband processor coupled to the receiver (paragraphs 0007-0008).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate coupling baseband processor to receiver taught by Loke into the modified apparatus of Ishizaki et al. and Kegasa et al., in order to process received baseband signal.

Art Unit: 2618

Regarding claim 9, Ishizaki et al. and Kegasa et al. teach the limitation of claim 1.

But, Ishizaki et al. and Kegasa et al. do not expressly disclose the limitation of the first receiver is adapted to down convert a first signal from the first antenna and wherein the second receiver is adapted to down convert a second signal from the second antenna because it is inherent to receivers to down convert received signals.

Loke teaches the limitation of a receiver down converts received signal (paragraphs 0007-0008).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate down converting received signal in receiver taught by Loke into the modified apparatus of Ishizaki et al. and Kegasa et al., in order to process signal content.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishizaki et al. by (US Patent#5274388) in view of Kegasa et al. (US Patent#6724804), Ying (US Patent#6697020) and Talwar (US Patent#5152010).

Regarding claim 8, Ishizaki et al. and Kegasa et al. teach the limitation of claim 1.

Ishizaki et al. teach the limitation of the first antenna receives a first radio frequency (RF) signal and the second antenna receives a second radio frequency (RF) signal and further comprising a baseband logic circuit adapted to process the first radio frequency (RF) signal and the second radio frequency (RF) signal (inherent).

But, Ishizaki et al. and Kegasa et al. do not expressly disclose the limitation of the second radio frequency (RF) signal is not correlated to the first signal and the baseband logic circuit adapted to provide interference detection and cancellation.

Art Unit: 2618

Ying teaches the limitation of receiving two different RF signals via two antennas (Fig. 3).

Talwar teaches the limitation of coupling an interference cancellation system to the receiver (column 1 line 64 to column 2 line 19).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate receiving two different RF signals taught by Ying and coupling an interference cancellation system to the receiver taught by Talwar into the modified apparatus of Ishizaki et al. and Kegasa et al., in order to provide different frequency channel services with interference cancellation detection capability.

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ying (US Patent#6697020) in view of Kegasa et al. (US Patent#6724804).

Regarding claim 17, Ying and Kegasa et al. teaches the limitation of claim 16.

Ying also teaches the limitation of the first signal from an omni-directional antenna, but Ying does not disclose the limitation of includes receiving the first signal from a whip antenna in the same embodiment.

However, Ying teaches the limitation of mobile telephone using traditional whip antenna (column 1 lines 30-37).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate using a whip antenna taught by Ying into the modified method of Ying and Kegasa et al., in order to enlarge signal receiving strength of the first antenna.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zhiyu Lu whose telephone number is (571) 272-2837. The examiner can normally be reached on Weekdays: 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2618

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

June 19, 2006
Zhiyu Lu

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SUPERVISORY PATENT EXAMINER